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The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

Department of Environmental Quality Engineering
Division of Air Quality Control
One Winter Street, Boston 02108

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September 21, 1990

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Mr. Louis Gitto, Director
Air Management Division
U.S. Environmental Protection Agency
John F. Kennedy Federal Building
Boston, Massachusetts 02203

Dear Mr. Gitto:

Attached please find a copy of the 1989 I/M Annual Report. This submittal satisfies Milestone #11 of Output #12 of the 105 Grant.

If you have any questions concerning the contents of this report, please contact James Neely of my staff.

Very truly yours,

Barbara Kwetz

Barbara Kwetz
Acting Director

BKA/lw

cc: Sarah Simon, DAQC
Laurel Carlson, DAQC
Peter Kopanon, RMV
Peter Hagerty, EPA

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MASSACHUSETTS AUTOMOBILE EMISSIONS INSPECTION AND MAINTENANCE PROGRAM ANNUAL REPORT FOR 1989

Introduction

The Massachusetts Automobile Emissions Inspection and Maintenance (I/M) Program was first implemented on April 1, 1983. The I/M Program's primary objective is to reduce carbon monoxide and hydrocarbon emissions from gasoline-powered light duty vehicles, and is part of the Department of Environmental Protection's (Department's) State Implementation Plan for attaining and maintaining the ozone and carbon monoxide National Ambient Air Quality Standards established under the Clean Air Act of 1977. The Program was designed to replace the former semi-annual safety inspection with an annual inspection procedure incorporating inspection of key safety items with a tailpipe emissions test examining the levels of hydrocarbons and carbon monoxide. Carbon dioxide levels and engine revolutions per minute (RPM) are also checked to determine whether the exhaust probe is properly inserted, whether there are any exhaust leaks, and to ensure that the vehicle is at idle during the testing procedure. The Program is jointly administered by the Department and the Registry of Motor Vehicles (Registry).

This report provides statistical and other information regarding the I/M program for the 1989 program year. Reporting and evaluation of this information is a necessary component of program effectiveness and quality assurance. The data provided include: general statistics on emissions inspections performed during the program year, including a breakdown of vehicles by cutpoint category; failures of the initial emissions inspection, including a breakdown of the types of emissions-related failures, and; "retest passes," which describe those vehicles which failed the initial inspection, received maintenance, and passed a subsequent emissions retest. Other pertinent program information presented includes Registry compliance and enforcement activities, as well a general status report on operations activities within the Department during the program year.

One major purpose for the production of this report is to report I/M Program status to the Environmental Protection Agency (EPA). As such, the data contained herein meet the reporting requirements established by the EPA. These data will therefore allow for the appropriate input parameters to the EPA's mobile models in order to indicate the emissions reduction impacts of the Commonwealth's I/M Program.

Data Collection and Processing

This report presents data primarily contained in the Department's I/M database for the period January 1 through December 31, 1989. The database contains all inspection data submitted to the Department by each of the four emissions analyzer suppliers (Allen Testproducts Division, Bear Automotive Service Equipment Co., Environmental Systems Products, and Sun Electric Corporation). Specifically, the database contains emissions and safety data for each vehicle inspection performed by an emissions analyzer at each licensed inspection station in the Commonwealth. During inspection the data are recorded onto a cassette tape which is housed within the analyzer. The cassette tapes are routinely collected by the analyzer supplier's field service technicians during monthly preventive maintenance visits. The cassettes are then copied onto a 9-track tape, which is submitted to the Department on a monthly basis. Once received by the Department, each tape is automatically processed and consolidated into the I/M database (transaction file). For more information regarding data sources and data acquisition, please refer to the Quality Assurance Plan for the Automobile Emissions Inspection and Maintenance Program (February, 1990).

Additional information for this report was compiled through the Department's records on operations activities. Information regarding compliance and enforcement activities was provided by the Registry.

Once all data tape submittals for 1989 were accounted for and their integrity ensured, the tapes were consolidated, first by month and then by quarter, so that the data could be selected and processed in the aggregate, and not only by each analyzer supplier.

The aggregated I/M transaction file for program year 1989 contains upwards of 3.4 million records. Given the enormous size of the file, and the specificity of the reporting requirements, it was necessary to cull out of the database only those records which were applicable for the analyses called for in this report. This process was done by developing selection criteria based upon a number of factors such as: performance of the analyzers (i.e., the manner in which each analyzer records data onto the cassette); the inspection procedure (i.e., what data are input manually during inspection by the certified inspector); and general inspection requirements (e.g., which vehicles are "exempt" from combined safety and emissions inspection and only require a safety inspection, cutpoint categories, etc.). Appendix A contains an internal memorandum which delineates the basic selection criteria for retrieving the records necessary for

analysis. The I/M transaction file is in fact one of the largest databases in the Department. The records were processed by the Division of Air Quality Control, Information Systems Branch, using the State College Regency Computer Network.

Once the selection criteria were established, 19 output files were set up to handle the data as they were selected, sorted, and counted. After sorting and counting, the data were processed through a program which matched records in the entire file by license plate number to ascertain the number of vehicles which initially failed the inspection and passed a subsequent retest (retest passes). Initial failures which were not matched to a retest in the initial month were saved to compare with retest passes in subsequent months, however, retest passes not matched to an initial test were not counted, but rather filed and archived.

Data Capture and its Impact on Data Analysis

The issue of data capture needs to be discussed in this report, as it is likely that not all of the data were captured for analysis. Reasons for this must be considered while evaluating the data. These include factors directly related to the selection criteria described above, as well as specific I/M program compliance issues (such as non-adherence to established inspection procedures), each or in combination, as well as technical limitations of the cassette itself.

One reason for incomplete data capture may have to do with the pickup and submittal of the data cassettes. According to the contractual agreement between the analyzer suppliers and the Department, data for a particular month is to be submitted to the Department within 45 days after the close of that month. Subsequently, cassette pickup and processing must occur in a timely manner. It has been noted that in the past not all analyzer suppliers have been vigilant in ensuring a complete data set for each monthly submittal. There have been cases where cassettes have been temporarily lost or misplaced, or were not picked up in a timely fashion. Since these cassettes were not transferred onto the monthly 9-track submittal, those data never reached the Department. Efforts are currently underway to address this problem by formally instituting reporting mechanisms, and exploring allowances for submittal of "late" data in dire circumstances. The emphasis in this initiative is to clearly account for all of the data.

There are also a number of possible causes which relate specifically to physical capture of the data onto the cassette, thus creating gaps in the database. For some of the emissions

analyzer models, inspections may be performed while the data cassette is removed or full, or the data cassette may have been rewound and written over, or the data cassette may have been turned over and recorded on the "B" side, but the "B" side may not have been transferred onto the 9-track tape by the manufacturer. In addition, it is possible that, for technical reasons, invalid data or corrupt files were transferred onto the 9-track submittal. An example of this could be that the 9-track tape is incompletely written over, and there are two end-of-file (EOF) markers on the tape. While the data have been submitted, they may be unreadable or unusable in the Department's automated system.

In all cases where data capture is more or less controllable by the manufacturers, either through improved effectiveness or efficient management of cassettes or 9-track tapes, better accounting of the data will be enforced as a top priority. Part of that effort may include some technical changes to the equipment (e.g., lock-outs) that would help maximize data capture.

There are also several possible explanations for not achieving full data capture that point to the Certified Inspector as it relates to the quality and propriety of the data entered onto the cassette. The anomalies concerning vehicle plate match may be a direct result of simple data entry errors, where the license plate may not have been correctly entered during one of the inspections (initial or retest), thus precluding a possible match during data processing. Another possibility is where a failed vehicle is repaired and reinspected at a facility different from the one at which it initially failed. It is likely to be entered as an initial inspection, and not a retest. Still another plausible scenario could be that the certified inspector may have designated the vehicle as "exempt" during the retest inspection. (This is only allowed in cases where the initial failure was a safety failure, and for the subsequent retest the emissions portion of the test is not required). The use of "exempt" in this manner, inappropriate as it may be, would have precluded the identification of that vehicle for a plate match. Efforts to include "exempt" vehicles in the retest count during data processing would not have achieved fuller data capture, as the analyzer automatically bypasses the emissions portion of the inspection once the exempt status is manually actuated and entered into the analyzer. The use of "exempt" status to inappropriately or unlawfully bypass the emissions inspection has been known to occur, and is currently being studied by the Department and the Registry.

Other possible data entry errors initiated by the certified inspector, which may have had an impact on data capture during the plate match, are summarized below. An error in any one digit

of any parameter would similarly preclude an accurate match between a vehicle initially failing and the same vehicles passing the retest.

1. Wrong Model Year on either Initial or Retest
2. Wrong Test Type ("I" entered instead of "R" for Retest)
3. Wrong Vehicle Type ("D" for heavy duty truck or "E" for exempt) on either Initial or Retest
4. Wrong Fuel Type ("D" for diesel entered instead of "G" for gasoline) or either Initial or Retest
5. Error in License Plate Number on either Initial or Retest

In cases where Department has not received the full complement of data from the analyzer suppliers (as described at the beginning of this section), data gaps and unmatched data sets do exist, thus preventing an accurate plate match between initial failures and retest passes. This could result in retests which cannot be matched up to an initial inspection, as well as initial inspections not matching up to a retest. Finally, in cases where an initial failure occurred in December, the matching retest may not have occurred until January of the following year. In that case, the data for the retest are on a different data file, and will not be matched to the initial inspection data.

In addition, it could be that during transcription of data from the data cassettes to the 9 track tape, certain cassettes may have inadvertently been transcribed twice. In this case, the number of any unmatched inspections on that cassette would be doubled.

While data capture has an immediate effect on the numbers of inspections and inspection passes and failures, the issue as to whether there is an actual effect on the rates presented below is less clear. Efforts to more adequately characterize data capture and the effect it may have on reporting are currently underway. As part of such an assessment, two associated issues must be examined. The first relates to whether an acceptable data capture rate, and conversely, an acceptable data loss, can be reasonably derived. Second, if such can be achieved, what significance can be attached to the acceptable data loss rate in terms of program effectiveness. Given the very nature of a decentralized I/M Program, a certain amount of data will be lost, or forever misplaced, somewhere along the way. Any attempt to achieve 100% data capture may ask the impossible, and it is at what cost in time and resources? In directing all program efforts at achieving full data capture, would it not be taking away from data analysis and other vital program operations? Current resource constraints demand a balanced perspective so as to have the time to examine the program's effectiveness.

Summary of Data

During data processing, efforts were made to more accurately characterize the number of vehicles receiving initial inspections, as opposed to reporting merely the number of initial inspection transactions. This seemed necessary, as a trend had been identified in the database in which vehicles were receiving multiple, consecutive initial inspections. Accordingly, the data processing program was set up first to count all the initial inspections performed, and then to select and count only the last initial inspection in cases where a vehicle is repeatedly tested. There is a 5% discrepancy between these two figures for the 1989 data, as 2,497,620 initial inspections appear to be performed on 2,375,740 vehicles. The reasons for this are not clear. A vehicle may have failed the inspection and was then given minor adjustments in the inspection bay and immediately retested as an initial inspection. Or perhaps this reflects inappropriate practices with respect to established inspection procedures. Future program operations efforts will be directed towards further characterizing and rectifying this discrepancy. However, for the purposes of this report, and to evaluate program effectiveness, a more appropriate base figure from which to work is the number of vehicles receiving initial emissions inspections, i.e., 2,375,740.

Table 1 describes the number of vehicles registered by the Registry of Motor Vehicles during calendar year 1989 versus the number of vehicles receiving an initial emissions inspection. Since emissions inspections are only required of light duty, gasoline powered vehicles which are less than 15 model years of age, a considerable percentage of the registered motor vehicle fleet are not subject to the inspection requirement, hence one explanation for the discrepancy between the two numbers. Also not included in the vehicles requiring emissions inspections are diesel-powered vehicles, trucks with a curb weight of greater than 8500 lbs., motorcycles, vehicles greater than 15 model years of age, and new model vehicles purchased within its respective model year but no greater than 12 months old. According to the Registry's database, as many as 450,000 current model vehicles (1989) may have been categorically exempted from the emissions test. As mentioned in the previous section, the use of "exempt" status to inappropriately or unlawfully bypass the emissions inspection has been known to occur, and it is possible that a number of vehicles have been so exempted and may therefore be accounted for in these categorical exemptions. It is also possible that the number of vehicles registered may actually represent the number of registration transactions, as opposed to actual registered vehicles. Based on the available data, approximately 56.5% of registered Massachusetts vehicles received an initial emissions inspection in 1989.

TABLE 1.
Number of Vehicles Requiring
and Receiving Inspections
(January 1 - December 31, 1989)

NO. OF VEHICLES REGISTERED BY THE RMV	NO. OF VEHICLES RECEIVING INITIAL EMISSIONS INSPECTIONS
4,206,159	2,375,740

Table 2 presents a breakdown of initial inspection passes and failures in 1989 by cutpoint category. The cutpoint categories were established to achieve the I/M Program's emission reduction targets, and correlate with the increasing stringency required of emission control equipment installed in vehicles as required by the EPA. The overall initial non-safety failure rate was 13.5%, while a breakdown of the rates by cutpoint category indicated a larger spread, the highest being a 21.0% failure rate for the 1975-1979 fleet. This is consistent with data from the 1987 and 1988 program years. These failures represent the full complement of emissions failures, i.e., exceedances of the established hydrocarbon (HC), and/or carbon monoxide (CO) cutpoints (emissions failures), as well as the carbon dioxide (CO2) leak check, and the idle check (RPM). It should be noted that the latter two are built in lock-out features to the analyzers and do not constitute true emissions failures. The emissions test is in fact precluded from being completed until the CO2 or RPM malfunction is corrected. Non-safety failures do not include the inspection of the fuel filler neck restrictor or the catalytic converter. Failures in these categories are not treated as emissions failures in the database, as they are visual inspections rather than functional tests.

TABLE 2.
Number of Vehicles Receiving
Inspections by Cutpoint Category
(January 1 - December 31, 1989)

CUTPOINT CATEGORY	NO. INITIAL INSPECTIONS	NO. PASSING INITIAL INSPECTION	NO. NON-SAFETY FAILURES	FAILURE RATE (%)
1981+	1,906,143	1,681,039	225,104	11.8
1980	112,621	92,139	20,482	18.2
1975-1979	356,976	281,846	75,130	21.0
TOTAL	2,375,740	2,055,024	320,716	13.5

The non-safety failures are further broken down in Table 3. There is a wide spread across cutpoint categories for emissions. The fleet of vehicles for model years 1975-1979 has the highest failure rate for emissions, at 15.2%, over twice that of the 1981+ fleet. Overall, the emissions failure rate is low, at 8.8%, and spans a range from 7.4% to 15.2% across cutpoint categories. The CO2/RPM failures, as a percent of total inspections, is very consistent across all cutpoint categories. Again, these trends are very consistent with the 1987 and 1988 I/M data sets.

TABLE 3.
Breakdown of Non-Safety Failures
by Type and Cutpoint Category
(January 1 - December 31, 1989)

CUTPOINT CATEGORY	NO. EMISSIONS FAILURES*	% OF TOTAL INSPECTIONS	NO. CO2/RPM FAILURES	% OF TOTAL INSPECTIONS
1981+	141,201	7.4	83,903	4.4
1980	13,854	12.3	6,628	5.9
1975-1979	54,149	15.2	20,981	5.9
TOTAL	209,204	8.8	111,512	4.7

* Includes HC and/or CO failures

Data on those vehicles which failed the initial emissions test and subsequently passed a retest (presumably after remedial work such as a tune-up) are presented in Table 4. It has been noted that the number of initial failures does not match the number of retested vehicles reported. In fact, the overall retest pass capture rate appears to be quite low, at 42.8%. This continues a trend of a slight, continual lowering of the retest pass capture rate since 1987 (45.4% in 1987 and 43.6% in 1988). There are a number of reasons why a failed vehicle may not have a follow-up retest pass. Many of these reasons have been discussed in the data capture section, and include a series of data-entry errors on the part of the certified inspector (i.e., typographical errors which prevent a plate match during data processing), inappropriate use of the "exempt" status, erroneous use of the "initial" versus "retest" status, and incomplete data cassette-to-9-track submittals.

There is also a population of vehicles which may have, in fact, failed an initial inspection and never received a retest. These vehicle may, in the interim, have been in an accident and junked, stolen, put into storage, or moved to another state. It is also possible that the owner of the failed vehicle may have secured a certificate of inspection through other means, and not through the typical retest procedure route. All combined, they may artificially inflate the number of initial inspections and suppress the true retest pass rate. Given the quantity and the configuration of those data, it may be impossible to discern among them all.

Despite apparent concerns regarding the retest pass capture rate, the remarkable consistency across all cutpoint categories is important to note. It should also be noted that the overall rate of initially failed vehicles which did not pass the retest (57.2%) actually represents a much smaller percentage of the <u>universe</u> of vehicles receiving initial inspections, i.e., 5.0%. This number is only slightly lower than the corresponding, but consistent, figures for 1987 and 1988 (5.6% and 5.4%, respectively).

TABLE 4.
Breakdown of Failures and Matched
Retest Passes by Cutpoint Category
(January 1 - December 31, 1989)

CUTPOINT CATEGORY	NO. OF INITIAL EMISSIONS FAILURES (HC/CO)	NO. OF MATCHED RETEST PASSES CAPTURED	% MATCHED RETEST PASSES CAPTURED
1981+	141,201	60,637	42.9
1980	13,854	5,823	42.0
1975-1979	54,149	23,101	42.7
TOTAL	209,204	89,561	42.8

Table 5 presents data on the number of inspection certificates, waivers, and temporary maintenance forms issued by the Registry in 1989. Inspection certificates do not include certificates of rejection. The reported number of inspection certificates was derived by adding the initial emissions inspection passes, unmatched retest passes, the 583,458 vehicles which were exempt from the emissions test but were subject to the safety portion of the inspection, and the estimated 450,000 current model year vehicles reported by the Registry which were also exempt from the emissions test.

TABLE 5.
Summary of Certificates Issued on Vehicles;
Inspections, Waivers, And Temporary Maintenance Forms
(January 1 - December 31, 1989)

TYPE OF CERTIFICATE	NUMBER
Inspection Certificates	3,724,672
Waivers	552
Temporary Maintenance Forms	11

Certificates of Rejection are not sold by the Registry, but are given out. There is no formal bookkeeping mechanism at the Registry which tracks the number of Rejection stickers actually issued in 1989.

Program Operations

The I/M program is jointly administered by the Department and the Registry. While the Registry is primarily responsible for enforcement activities at the inspection stations, on the road, and concerning motor vehicles in general, the general oversight, management, administration, and some day-to-day operations of the emissions inspection program are the responsibility of the Department. This situation requires a close working relationship between the two agencies, as information critical to fulfill each agency's regulatory obligations needs to be routinely requested and routed to its respective recipients in a timely fashion. For more information regarding the functional and operational responsibilities and interactions of the Department and the Registry, please refer to the Quality Assurance Plan for the Automobile Emissions Inspection and Maintenance Program (February, 1990).

A summary of Registry compliance and enforcement activities at the licensed inspection stations is presented in Table 6. The number of routine station visits includes all classes of station (A, B, C, and D). Class A stations are public inspection stations for safety and emissions inspections, stations with a class B license conduct fleet inspections for safety and emissions, class C stations are fleet inspection stations for safety inspections only, and those public inspection stations which perform safety only inspections hold a class D license. According to Registry figures, there were 356 class C stations and 85 class D stations in 1989.

TABLE 6.
Summary of Station Compliance Activities
(January 1 - December 31, 1989)

ACTIVITY	NUMBER
Licensed Inspection Stations	2752
Station Revocations	9
Station Suspensions Issued	363
Warnings Issued	193
Covert Station Visits	178
Courtesy Cards Issued Since 1987	1422
Routine Station Visits	16,200

The Registry and the Department jointly conduct quality assurance of the analyzers in the field through an analyzer audit program. Results of the analyzer audit program have already been submitted to the EPA for 1989. For summaries particular to audits conducted in 1989, please refer to "Massachusetts Emissions Analyzer Audit Program Summary Report" for the periods October 1, 1988 - March 31, 1989 (submitted August 25, 1989); April 1, 1989-September 31, 1989 (submitted November 20, 1989), and; October 1, 1989 - March 31, 1990 (submitted May 15, 1990).

One major aspect of program operations within the Department involves public outreach and public availability. In 1989, this agency received numerous telephone calls and written requests from a variety of sources which included businesses, inspection stations, the general public, and local, state, and federal agencies. The requests ranged from searches of one of the databases for specific information, to queries regarding waiver procedures, to general questions about the program. Table 7 presents a breakdown of the types and number of telephone queries which were logged in during 1989. Queries regarding a specific program component comprised the bulk of the calls. These questions covered topics such as warranties, waivers, imports, consumer protection, engine switching, failures in RPM, catalytic converters and fuel filler necks, and special test procedures on Fords and Hondas.

TABLE 7.
Number and Types of Telephone Inquiries
Regarding the I/M Program
(January 1 - December 31, 1989)

TYPE OF INQUIRY	NO. OF CALLS
Queries Regarding a Specific Program Component*	132
Inspector Related (Certification/Transfer)	48
Records Search (ISB)**	38
Payment of Monthly Preventive Maintenance Fee	20
General Queries from Manufacturers	20
Analyzer Audit Program	11
Service Station Complaints	7
Analyzer Approval Queries	7
Data Printout Request (APIB)***	6
Coverage under Service Contract	4
TOTAL CALLS LOGGED IN	293

* Includes issues such as warranties, waivers, imports, consumer protection, engine switching, failures in RPM, catalytic converters and fuel filler necks, and special test procedures

** ISB = Information Systems Branch

*** APIB = Area Programs Implementation Branch

Inquiries are initiated by these requestors for a variety of reasons. A breakdown of the calls logged-in during 1989 by requestor is presented in Table 8. Calls from the general public comprise the bulk of the queries.

TABLE 8.
Breakdown of Logged In Telephone Inquiries
by Requestor
(January 1 - December 31, 1989)

REQUESTOR	NO. OF CALLS	% OF TOTAL
General Public	99	33.8
Inspectors	48	16.4
Agencies (Local, State, Federal)	47	16.0
Inspection Stations	44	15.0
Manufacturers	32	10.9
Businesses	19	6.5
Legislators	4	1.4

Since the I/M databases are public record, it is part of the Department's responsibility to respond to requests for access to those data. As shown in Table 7, there were 38 telephone requests for data searches of the transaction file. These requests are routed to the Information Systems Branch, and require that individual 9-track tapes are hung at the State College and searched, based on the specified parameters. Processing these requests takes a certain amount of time, sometimes several weeks, due in part to the sheer volume of the database. Some requests require the generation of printouts spanning several years of data for a particular station, and others require one transaction listing for a particular station on a particular date. Both requests, however, require, <u>at a minimum</u>, the hanging of at least one tape, and a search through at least one full month's worth of data for one analyzer, which translates into a search through an average minimum of 86,000 records.

There are other types of data searches and requests which involve the inspector file and the station file. These requests are handled directly by the Area Programs Implementation Branch, and can be processed in a much shorter period of time. Timely responses to all data requests, however, require timely data acquisition. Any delays in the submittal of a 9-track tape by a manufacturer, for example, could impact the turnaround time on an enforcement case.

Also during 1989, the Department reissued the contractual agreements between the Department and the manufacturers of the approved emissions analyzers. The original contracts issued in 1982 had expired, and were reissued with minor modifications. Prior to final approval from the Department, financial performance bonds were required to be remitted by each analyzer manufacturer to cover a baseline of $200,000 plus an additional $100,000 for each 250 analyzers sold in Massachusetts.

Two additional analyzers, Bear model # 40-910 Massachusetts Gas Analyzer and Hamilton Test Systems model # HT204550-3, were conditionally approved for sale and use in the Commonwealth in May, 1989, pending final submittal of the performance bond and signed contract, which occurred in late 1989.

Also late in 1989, with the advent of new staff within the Area Programs Implementation Branch, the Department launched a concerted program evaluation effort. One particular issue, the magnitude of the data capture rate issue and its significance with respect to operations (i.e., compliance) as well as in evaluating program effectiveness (i.e., through data analysis) has been one of the major foci of this effort. It has yet to be fully characterized; during the 1989 program year, however, the Department began serious initiatives aimed at identifying some of the key forces which contribute to this problem and is in the process of rectifying the situation on a number of fronts. This has entailed a number of strategies, all of which have required continued cooperative interactions with the Registry and the EPA, as well as with the inspection stations and each analyzer supplier. Progress in these initiatives are expected to be reflected in future I/M annual reports.

Appendix A

M E M O R A N D U M

TO: Bob Boisselle

THRU: James Neely

FROM: Leah Weiss

DATE: July 16, 1990

RE: Request for Data for 1989 I/M Annual Reports

In order to fulfill the reporting requirements for Milestone #11 of the 105 Grant, certain data from the I/M Transaction File need to be processed by Information Systems and analyzed by the Area Programs Implementation Branch. Therefore, we are requesting that the following statistics be generated, based on the I/M Transaction File (across all emission analyzer types) for the period January 1 - December 31, 1989:

1. Total Number of Inspection Transactions.

2. Total Number of Initial Emissions Inspections Performed. This involves totalling the number of "I"s in the "Test Type" field for all analyzer types for all vehicles for which the model year ("Veh Year" field) is 1975 or greater. Not included in this category are vehicles whose "Test Type" includes "D" or "E."

3. Total Number of Vehicles Exempted from the Emissions Inspection. This involves adding up the number of transactions for which the model year is 1975 or ~~greater~~ less, or "Test Type" equals either "D" or "E."

4. (a) Total Number of Vehicles Receiving Initial Emissions Inspections. There has been a trend of one vehicle receiving multiple, consecutive initial inspections. Therefore, we would like to identify the number of vehicles receiving initial inspections. This involves counting (and totalling) the "I" in the "Test Type" field for the conditions described in #2 above, only if the characters in the "Plate Num" field are not identical.

   (b) Breakdown of Total Number of Vehicles Receiving Initial Emissions Inspections by Cutpoint Category: This involves a breakdown of the data requested in #4 (a) above for the following cutpoint categories:

Vehicle Year	No. of Initial Inspections
1981 and greater	
1980	
1975-1979	

5. Pass/Fail Status of the Vehicles Receiving Initial Emissions Inspections. Maintaining the same format and conditions described in #4 (a) and (b) above, the pass/fail status should be ascertained based on emissions testing only (HC and/or CO failures). NOTE: WE WANT TO BE ABLE TO ASCERTAIN THE NUMBER OF INITIAL PASSES, SO PLEASE KEEP TRACK OF ALL TOTALS. Failures in RPM or CO2 are not counted as emissions failures, and should be tallied separately. Failures in either CO2 or RPM supersedes a failure in CO and HC, and the transaction should not be counted as an emissions failure, no matter what the readings are in the HC and CO fields, and if they appear to be failures. Reporting of the data should be as follows:

Vehicle Year	# Initial Inspections	# Initial Passes	# Emission (HC/CO) Failures	#CO2/RPM Failures
1981+				
1980				
1975-1979				

6. Number of Failed Vehicles Passing Retest after Maintenance and Reinspection. Involves totalling the number of vehicles which have failed an initial emissions test (as described in #5 (a) and (b) above) and passed on a subsequent retest ("R" in the "Test Type" field). This includes matching the initial test and retest by license plate number, and reporting as follows:

Vehicle Year	# Initial Emission Inspections Failures	# Retest Passes
1981+ greater		
1980		
1975-1979		

Based on our meeting of July 3rd, it is my understanding that these data will be delivered to us no later than August 13, 1990. I have already identified which 1989 tape submittals still need to be processed, and have made arrangements with Harold to go over this information. If you anticipate any problems in processing this request, please let us know as soon as possible. Thank you for your continued cooperation.